



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL ENVIRONMENTAL SATELLITE, DATA,
AND INFORMATION SERVICE
Washington, D.C. 20233

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10 January 1991

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PR 92-125
Rm 7611

Ms. Donna R. Searcy
Federal Communications Commission
1919 M Street, N.W.
Washington, DC 20554

Subject: Petition to Authorize the Carriage of 406 MHz Emergency Locator Beacons (ELTs) on
General Aviation Aircraft

Dear Ms. Searcy:

The purpose of this petition is to obtain FCC approval and to declare that 406 MHz Emergency Locator Beacons are authorized to be carried by the general aviation aircraft of the United States.

The COSPAS-SARSAT system of distress monitoring spacecraft has progressed from an experimental system to a fully operational international system involving 18 nations providing both space and ground segments. As of 30 October 1990, 1607 people have been saved by this world-wide distress alerting and locating system.

The system is capable of providing distress alerting and location on frequencies of 121.5 MHz, 243.0 MHz and 406.025 MHz. Currently, 121.5 MHz is the most widely used frequency utilized by both the aviation and maritime communities. The military is the primary user of the 243.0 MHz frequency.

Public Law 100.540 (1988) established the requirement that all U.S. uninspected commercial vessels would be required to carry 406 MHz emergency beacons by 30 September 1991. This requirement was established so that vessels of higher risk would have the distress alerting advantages provided by 406 MHz beacons.

The primary advantages that 406 MHz beacons offer are:

- Elimination of Frequency Interferers - About 92% of the initial 121.5 MHz ELT signals received by the satellites are caused by frequency interferers. This large number of false signal precludes the immediate launch of search and rescue



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operations until some kind of verification process can be utilized to determine if the signal is being transmitted from an interferer or a real distress. Utilization of the 406 MHz frequency virtually eliminates this interference problem which in turn allows the search and rescue force to be more responsive to real alerts.

- Identification of the Vessel in Distress within the Distress Message - All 406 MHz beacons transmit a coded signal which identifies the beacon and enables access to owner and vessel identification through a beacon registration data base. This identifies the search objective for the search and rescue forces (which cannot be accomplished using the 121.5 MHz beacons) and it also facilitates the elimination of false alarms prior to the launch of search and rescue forces.
- Resolution of Ambiguous Location - The resolution of ambiguous location needed with the 121.5 MHz distress alerts adds to the time between when a distress occurs and when rescue forces can arrive on the scene. In most cases, using 121.5 MHz, search operations are delayed slightly over one hour so that data from another satellite pass can be processed. With data from two satellite passes the ambiguity problem can be solved. This problem is minimized with the 406 MHz because of its improved oscillator stability and the availability of a registration data base. The oscillator provides accurate location and the registration data base can be immediately used to determine where the search objective would logically be operating. These two factors allow search forces to launch between 80 and 90% of the time with first satellite pass information while no more than a 60% first pass launch is achievable with the 121.5 MHz system.
- Potential for Immediate Alert Using a Planned Geostationary Satellite System - NASA has demonstrated that the 406 MHz beacons can be reliably detected by a geostationary satellite with a 406 MHz repeater. NOAA is planning to include this capability on its future geostationary meteorological satellites and establish the necessary ground stations. This will permit near instantaneous detection of 406 MHz distress alerts as compared to an average wait time of 2.0 hours in the northern hemisphere using the 121.5 MHz system. This 2.0 hour advance notification advantage will, in some cases, save additional lives. Again, the 406 MHz beacon registration data base will be used to identify the beacon owner and or designated alternate contacts to obtain a general location of the vessel transmitting the distress so that the initial search and rescue action can be initiated earlier. (Currently, the geostationary distress alerting system can not provide location information unless the beacon has an interface with onboard navigation systems or has the capability of determining location internally and transmitting this data).

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• Greater Location Accuracy - The 406 MHz system provides a location accuracy of 2-5 km vs. the 15 -20 km accuracy typically achieved with the 121.5 MHz beacons.

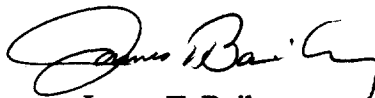
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• Global Coverage - While much of the northern hemisphere is covered by ground stations needed to process 121.5 MHz signals, many areas of the world are not covered. Because the 406 MHz satellite instruments are capable of collecting, storing and retransmitting data when over a ground station the system provides world-wide coverage.

- Satellite System Capacity - The 406 MHz satellite system can accommodate up to several hundred simultaneous transmissions even when some of the signals are co-located. This will allow for virtually unlimited utilization of 406 MHz beacons without system failure caused by overloading which is possible with the 121.5 MHz system.

Whereas, existing application of 121.5 and 243.0 MHz beacons are subject to mandatory carriage requirement by the Federal Aviation Administration and the United States Coast Guard and whereas, the United States Coast Guard has mandated that uninspected commercial vessels will carry 406 MHz beacons in lieu of 121.5 MHz beacons and because the 406 MHz distress alerting system offers distinct advantages to both the survivor and the responding rescue force, this petition requests that the Federal Communication Commission authorize the carriage of 406 MHz Emergency Locator Transmitters (ELTs) on United States general aviation aircraft in lieu of 121.5 MHz ELTs.

Sincerely,



James T. Bailey
Division Director,
SARSAT Operations